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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,591	07/16/2003	Shih-Hsien Wu	3313-1016P	7448
2292	7590	10/19/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			NADAV, ORI	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 10/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/619,591

Applicant(s)

WU ET AL

Examiner

Ori Nadav

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11, 14-24 and 26-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 14-24 and 26-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 26-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claimed limitation of "a covering layer, for said inorganic substrate being embedded therein", as recited in claim 26, is unclear as to which element is embedded therein. If the covering layer is embedded therein, it is unclear how the covering layer is embedded in said inorganic substrate, since figure 1 clearly depicts the covering layer being located on the inorganic substrate.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-11, 14-18, 20-24, 26-30 and 32-36, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al. (6,528,145) in view Nishide et al. (5,827,605), Zak (6,006,427) and Hashemi et al. (6,867,493). Berger et al. in figure 3 and related text a composite laminate substrate, comprising:

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at least an inorganic substrate 20 having at least a wiring 26 formed thereon; and two substrates, comprising print circuit boards (column 10, lines 32-45 and column 12, lines 44-46) integrated with the at least an inorganic substrate, having circuits for electrical connections between outer input/output ports and said wiring of said inorganic substrate through said print circuit boards (substrates).

Berger et al. do not teach the print circuit boards being organic print circuit boards and at least a passive component formed in/on the inorganic substrate, and at least one bonding layer having vias formed therein, for bonding said inorganic substrate and said print circuit board (substrate).

Nishide et al. teach in figure 1 and related text an inorganic substrate 1, 2 having at least a passive component 4, 5, 8 selected from a group consisting of capacitor, inductor and resistor, formed therein/thereon, and circuits for electrical connections between outer input/output ports and said passive component of said inorganic substrate.

Zak teaches print circuit boards being organic print circuit boards, and the advantages of using organic print circuit boards (column 2, lines 40-45).

Hashemi et al. teach in figure 8 and related text at least one bonding layer 815 having vias 853 formed therein, for bonding substrate 820 and a print circuit board 898.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use organic print circuit boards and at least a passive component formed on the inorganic substrate in Berger et al.'s device, such that two organic substrates, located on two sides of said inorganic substrate, having electrical

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connections between outer input/output ports and said passive component of said inorganic substrate through said organic substrates, and at least one bonding layer having vias for bonding said inorganic substrate and said print circuit board (substrate), in order to reduce the cost of making the device and in order to make more compact device by forming the two organic substrates on both sides of said inorganic substrate and by forming the passive elements within the inorganic substrate, and in order to provide more solid connection between the inorganic substrate and the print circuit board, respectively.

Regarding claims 2, 15 and 27, prior art teaches the material of said inorganic substrate is selected from the group consisting of ceramic, silicon and glass.

Regarding the process limitations recited in claims 3-4, 7-8, 11, 16-17, 20-21, 24, 28-29, 32-33 and 36 ("passive component is made from the process selected from the group consisting of thick film process and thin film process", "passive component is made from a semiconductor fabrication process", "the circuit of the print circuit boards are made separately, and then stacked together to form said organic substrates, " the circuit of the print circuit boards are made separately, then stack the print circuit boards together, and finally form the circuit of a surface layer with build-up process to form said organic substrates", and "wherein said organic substrate is made on said inorganic substrate with build-up process", these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced.

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Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding claims 9-10, 22-23 and 34-35, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use at least a passive component on said organic substrate and selected from a group consisting of capacitor, inductor and resistor in prior art's device in order to the device in an application which requires a passive element.

Regarding claim 26, since it can be understood that the covering layer is embedded in said inorganic substrate and integrated with said organic substrate (that is, sandwiched there between), then it is understood that the three elements are embedded within each other. Therefore, the top layer of Berger et al.'s substrate 22 can be considered as the bonding layer, and this layer covers the inorganic substrate (below it) and is integrated

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with said organic substrate (that is sandwiched there between), and embedded in said inorganic substrate in said organic substrate, and said covering layer 22 further comprising circuits for providing electrical connections between said passive component and said organic substrate.

Claims 6, 19 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al., Nishide et al., Zak and Hashemi et al., as applied to claims 1 and 14 above, and further in view of Czjakowski et al. (6,613,978).

Berger et al., Nishide et al., Zak and Hashemi et al. teach substantially the entire claimed structure, as applied to claims 1 and 14 above, except each of said organic substrate is composed of a plurality of print circuit boards.

Czjakowski et al. teach a plurality of print circuit boards formed on a ceramic substrate.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form each of said organic substrate of a plurality of print circuit boards, in prior art's device in order to use the device in an application which requires plurality of print circuit boards.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-11, 14-24 and 26-36 have been considered but are moot in view of the new ground(s) of rejection.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ori Nadav whose telephone number is 571-272-1660. The examiner can normally be reached between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'Ori Nadav', written in a cursive style.

O.N.  
10/14/06

ORI NADAV  
PRIMARY EXAMINER  
TECHNOLOGY CENTER 2800